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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/651,452	08/29/2003	Somashekar Ramachandran Subrahmanyam	15786-018001	8750

26181 7590 01/10/2007

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EXAMINER	
JACOB, MARY C	
ART UNIT	PAPER NUMBER
2123	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/651,452	SUBRAHMANYAM, SOMASHEKAR RAMACHANDRAN	
	Examiner	Art Unit	
	Mary C. Jacob	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *8/29/03* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-51 have been presented for examination.

Claim Objections

2. Claims 1, 7, 15, 27, 28, 35, 36, 42, 46 and 48 are objected to because of the following informalities. Appropriate correction is required.

3. Claims 1 and 36 recite the term "generation technique". Although the specification gives examples of generation techniques such as "a triangular technique" and "a quadrilateral technique", it still recites that "generation techniques" "may include, but are not limited to" these examples (page 9, lines 26-29). Although it was determined that the examples of the triangular and quadrilateral techniques are enough to define the meets and bounds of the claimed subject matter, the claim can still be interpreted to be defined broadly since "generation techniques" are not limited to triangular and quadrilateral techniques.

4. Claims 7 and 15 recite, "tracking attributes specifying at least attributes of the faces are to be propagated". This should be revised for clarity, for instance, "specifying at least the attributes of the faces that are to be propagated...".

5. Claims 27 and 28 recite "selective boolean operation". This should be revised for clarity, for instance, "performing a selective boolean operation".

6. Claim 35, lines 3-4, "from tool" would be better if written "from the tool".

7. Claims 36, 42, 46 and 48, line 2, "storage medium" would be better if written "a storage medium".

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 1-51 were rejected under 35 U.S.C.112, first paragraph, for not disclosing the best mode contemplated by the inventor. This rejection was given due to the fact that the specification gives a number of ways in which the invention can be practiced, yet does not appear to set forth one particular way of practicing the invention that could be considered the best mode. However, the arguments submitted by Applicant have been determined to be persuasive, therefore, in light of these arguments, the rejections of Claims 1-51 under 35 U.S.C.112, first paragraph, for not disclosing the best mode have been withdrawn.

10. The rejections of Claims 1 and 36 under 35 U.S.C. 112, first paragraph as failing to comply with the enablement requirement have been withdrawn as further consideration has determined that "generation technique" is enabled by the specification.

11. The rejections of Claims 1, 25, 32, 33, 36, 49 and 50 under 35 U.S.C. 112, first paragraph as failing to comply with the enablement requirement have been withdrawn

as further consideration has determined that one of ordinary skill in the art would be able to understand the steps of "selecting", "applying" and "determining".

12. The rejections of Claims 25, 32, 33, 49 and 50 under 35 U.S.C. 112, first paragraph as failing to comply with the enablement requirement have been withdrawn as further consideration has determined that "valid" faces are enabled by the specification.

13. Claims 11, 21, 23, 30, 31, 47 and 48 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

14. Claims 11 and 23 recite, "non-regularized Boolean operation". The specification recites the use of a "selective Boolean operation" (page 11, line 28; page 12, line 9; page 13, line 18; page 14, lines 2 and 12) and uniting bodies in a "non-regularized" manner (page 16, lines 24-25). There is no discussion of the application of a "non-regularized Boolean operation" in the specification. While Exhibit B discloses non-regularized Boolean operations and may show that it is a term known in the art, the specification fails to disclose "non-regularized Boolean operations" and how they are used in the practicing of the embodiments of the invention. Therefore, the specification does not enable one of ordinary skill in the art to make and/or use the invention disclosed in the claims.

15. Claims 21, 30, 31, 47 and 48 refer to the following limitations: "conditionally forming within the computing environment, a wire body" and "initializing within the computing environment, data representations of disjoint pieces of the wire body as data representations of one or more paths...". However, there is no recitation of a "wire body" in the specification or a description of how a wire body is used to implement the limitations given in the claim language. Therefore, the specification does not enable one of ordinary skill in the art to make and/or use the invention disclosed in the claims. Further, although Exhibits C and D show the use of a "wire body" in solid modeling, the phrase "wire body" can also take on alternate meanings, therefore, the lack of recitation and use of a "wire body" in the specification still renders the term indefinite in the claims. For example, Herzberg (US Patent 5,708,469) describes a "wire body", or "wire cage", created with twelve wires forming six transparent faces of a wire cube that forms the field of view for various cameras in a computer controlled telepresence camera and display system (column 3, lines 16-17; column 4, lines 25-33; column 6, lines 53-66).

16. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

17. The rejections of Claims 1 and 36 under 35 U.S.C. 112, second paragraph, have been withdrawn as further consideration has determined that "generation technique" is adequately defined by the specification as disclosed (page 9, lines 26-29).

18. Claims 1-28, 30-45, 47, 49-51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

19. Claim 1 recites the limitation "the result" in line 8. There is insufficient antecedent basis for this limitation in the claim.

20. Claim 12 recites the limitation "the untrimmed tool" in line 7. There is insufficient antecedent basis for this limitation in the claim.

21. Claim 12 recites the limitation "the trimmed tool" in line 9. There is insufficient antecedent basis for this limitation in the claim.

22. Claim 21 recites the limitation "the located one or more edges" in line 4. There is insufficient antecedent basis for this limitation in the claim.

23. Claim 30 recites the limitation "the located one or more edges" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

24. Claim 31 recites the limitation "the located one or more edges" in lines 6-7. There is insufficient antecedent basis for this limitation in the claim.

25. Claim 35 recites the limitations "the profile" and "the tool" in line 2. There is insufficient antecedent basis for these limitations in the claim.

26. Claim 36 recites the limitation "the result" in line 6. There is insufficient antecedent basis for this limitation in the claim.

27. Claim 42 recites the limitation "the untrimmed tool" in line7. There is insufficient antecedent basis for this limitation in the claim.

28. Claim 42 recites the limitation "the trimmed tool" in line 10. There is insufficient antecedent basis for this limitation in the claim.

29. Claim 47 recites the limitation "the located one or more edges" in line 4. There is insufficient antecedent basis for this limitation in the claim.

30. Claim 51 recites the limitations "the profile" and "the tool" in line 3. There is insufficient antecedent basis for these limitations in the claim.

31. The term "valid" in Claims 25, 32, 33, 49 and 50 is a relative term which renders the claim indefinite. The term "valid" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The specification discusses factors that determine whether a located face is invalid "may include" certain criteria (page 16, lines 13-21). Although one of ordinary skill in the art can understand that "valid" faces will be the opposite of "invalid" faces, the criteria for "invalid faces" still fails to adequately define the criteria for what determines an "invalid face" since the criteria "may include" those criteria specified by the specification and further, "may include" any number of other unspecified and undefined criteria.

32. Due to the number of 35 U.S.C. 112, second paragraph rejections, the examiner has provided a number of examples of the claim deficiencies in the above rejection(s), however, the list of rejections may not be inclusive. Applicant should refer to these rejections as examples of deficiencies and should make all necessary corrections to

eliminate the 35 U.S.C. 112, second paragraph problems and place the claims in proper format.

Due to the vagueness and a lack of a clear definition of the terminology and phrases used in the specification and claims, the claims have been treated on their merits as best understood by the examiner.

Claim Rejections - 35 USC § 101

33. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

34. Claims 1-51 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

35. Claims 1-51 are directed to a method to "generate a fillet weld bead". This claimed subject matter lacks a practical application of a judicial exception (law of nature, abstract idea, naturally occurring phenomenon) since it fails to produce a useful, concrete and tangible result. Specifically, the claimed subject matter does not produce a tangible result because the claimed subject matter fails to produce a result that is limited to having a real world value rather than a result that may be interpreted to be abstract in nature, as, for example, a thought, a computation or manipulated data. More specifically, the claimed subject matter provides for "generating a data representation of the fillet weld bead". This produced "result" remain in the abstract and thus, fails to achieve the required status of having a real world value. The generation of this "data

representation" remains within the "computing environment" and therefore, is not a "tangible" result since nothing is done with this "data representation".

Claim Rejections - 35 USC § 103

36. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

37. Claims 1-4, 7-11, 12, 15-39, 42, 45-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Subrahmanyam et al ("Feature Attributes and Their Role in Product Modeling", Solid Modeling '95, Salt Lake City, Utah, 1995) and further in view of Computer & Automation Institute ("PROARC, No. 7831, CAD-Based Programming System for Arc Welding Robots in One-Off Production Runs", ESPRIT, 1/16.2001), herein referred to as CAI.

38. As to Claims 1-4, 7-11, 12, 15-39, 42, 45-51 Subrahmanyam et al teaches: in a computing environment, a method to generate solid models that includes: examining within the computing environment, facial characteristics of the faces of the components (sections 3.6 and 3.7); selecting within the computing environment, a generation technique based at least in part on the result of said examining and applying within the computing environment, the selected generation technique to generate a data representation of the solid model (sections 4.2, 4.3, 4.4, "Geometric Transformations",

"Shape-Changing Operations", "Topology-Changing Operations"; Table 1 and description); examining within the computing environment, one of the faces to determine at least one of whether the face is planar and whether the face is cylindrical (section 3.6, line 9-10); examining within the computing environment, the faces of one component to determine whether the faces lie in a single plane (page 121, column 2, 2nd paragraph, "A full overlap..."); examining within the computing environment, a first face of a first component and a corresponding second face of a second component to determine whether the first and second faces are perpendicular (section 4.2, lines 14-18); wherein the applying comprises assigning within the computing environment, one or more attributes to the faces, including at least one of tracking attributes specifying the one or more attributes are to be propagated during each of a split, copy and merge operation performed within the computing environment on data representations of the faces, and ownership attributes specifying ownership of the fillet weld bead by the faces (section 3.6; section 4.4, paragraph 1); wherein the applying comprises generating a blank, based at least in part on bodies referred to by the faces (page 117, column 2, paragraph 5, "The slot and the hole..." and Figure 5, "Starting Block"); constructing a profile based at least in part on faces of components of an article of a manufacture to be fillet welded together at the faces (section 4.4, paragraph 1); generating with the computing environment, a tool, based at least in part on a profile (page 117, column 2, paragraph 5, "The slot and the hole..." and Figure 4, "Starting Block"; Figure 3 and description); wherein said applying comprises constructing within the computing environment, a trimmer body, and applying within the computing environment, a non-

regularized boolean operation between the trimmer body and a tool (page 117, column 2, paragraph 5, "The slot and the hole..." and Figure 5, "Slot Feature Attributes", "Hole Feature Attributes"); conditionally trimming within the computing environment, the tool, with a data representation of the untrimmed tool to be initialized as a data representation of a model to be used to weld the components together at the faces if, trimming is not performed, and a data representation of the trimmed tool to be initialized as a data representation of a model to be used to weld the components together at the faces, if, trimming was performed (Figure 4, wherein the Slot Feature and Hole feature attributes are subtracted, therefore, trimming, the starting block attributes; wherein if the Slot and Hole features or any other attributes were not present to be subtracted, the starting block would not be trimmed); assigning one or more attributes to other faces of the components specifying faces of the fillet weld bead are not to overlap with these other faces of the components (page 121, column 2, paragraph 3, "In Figure 7(c)..."); wherein the generating of a blank comprises locating, one or more bodies referred to by the faces (section 3.7, lines 1-6, lines 10-11; Figure 4, Design View); replicating within the computing environment, data representations of the located one or more bodies (Figure 4, "Slot feature attributes", "Hole Feature Attributes"); conditionally forming within the computing environment, a unified body, if, data representations of more than one body are replicated, and initializing within the computing environment, a data representation of a located body as a data representation of the blank if, only one body was located, and initializing within the computing environment, a data representation of the unified body as a data representation of the blank if, the conditional forming

operation was performed (Figure 4, wherein the Slot Feature and Hole feature attributes are subtracted, therefore, trimming, the starting block attributes; wherein if the Slot and Hole features or any other attributes were not present to be subtracted, the starting block would not be trimmed); assigning one or more attributes to other faces of the components specifying faces of the fillet weld bead are not to overlap with these other faces of the components (page 121, column 2, paragraph 3, "In Figure 7(c)..."); comprises collecting one or more edges of a blank (section 3.6, lines 5-8, section); replicating within the computing environment, data representations of the located one or more edges (section 4.4, lines 9-15); conditionally forming within the computing environment, a wire body if, data representations of more than one edge are replicated (Figure 6(b) and section 4.4, lines 12-17); initializing within the computing environment, a data representation of a located edge as a data representation of a path if, only one edge of a blank was located, and initializing within the computing environment, data representations of disjoint pieces of the wire body as data representations of one or more paths if, the conditional forming operation was performed (pages 120-121, "Splitting Operations"); sweeping the constructed profile within the computing environment to generate the tool (page 119, "Sweeping Operations"; section 4.3, paragraph 1); determining faces of the blank that are incident on the first and second points; selecting, valid ones of said faces copying and extending within the computing environment, the selected valid ones of said faces into bodies, and uniting within the computing environment, said bodies, to form the trimmer body(section 4.4, lines 12-15; page 121, "Merging Operations" paragraphs 1-4); transfer of attributes from edges of

the profile to lateral faces of the tool (section 4.4, lines 5-15); selective boolean operation on the tool and a trimmer body (page 117, 2nd column, "The slot and the hole..."; Figure 4); and initialization of the result of the selective boolean operation as a data representation of the solid model (Figure 4); subtraction of a blank, created based at least in part on bodies referred to by the faces, from the tool, selective boolean operation on the result of the subtraction and a trimmer body and initialization of the result of the selective boolean operation as a data representation of the solid model (page 117, 2nd column, "The slot and the hole..."; Figure 4).

39. Subrahmanyam et al does not expressly teach the solid model being a data representation of a fillet weld bead; generating one or more paths, based at least in part on edges of a blank; determining whether a path is open or closed; on determining the path is open, determining a start and an end point of the path; determining a first and a second point on a blank corresponding to the start and end points of the path.

40. CAI teaches the PROARC system, that is capable of simulating, generating and reusing entire or partial welding sequences for robot program generation and includes macros for fillet welds, that is implemented on the world-leading PC-based CAD system, AutoCAD that will enable the user to work with the new system effectively after a short time therefore, rising the productivity of the user (Section 1, paragraphs 3 and 4; section 3, paragraphs 1 and 2). Computer & Automation Institute further teaches the solid model being a data representation of a fillet weld bead and generating one or more paths, based at least in part on edges of a blank (section 3, 4th bullet; page 8, "GeomIMP; section 6.2, "Macro Definition for Seams", "Search Sequences"; page 19,

"Program Generation Module, paragraphs 1 and 3; Section 8, 6th bullet); determining whether a path is open or closed on determining the path is open, determining a start and an end point of the path determining a first and a second point on a blank corresponding to the start and end points of the path (section 6.2, "Macro Definition for Seams", "Search Sequences").

41. Subrahmanyam et al and CAI are analogous art since they are both directed to the use of CAD in mechanical design.

42. It would have been obvious to one of ordinary skill at the time the invention was made to modify the method of generating solid models as taught by Subrahmanyam et al to further include the solid model being a data representation of a fillet weld bead, generating one or more paths based at least in part on edges of a blank and determining whether a path is open or closed, on determining the path is open, determining a start and an end point of the path, determining a first and a second point on a blank corresponding to the start and end points of the path as taught by CAI since CAI teaches the PROARC system, that is capable of simulating, generating and reusing entire or partial welding sequences for robot program generation and includes macros for fillet welds, that is implemented on the world-leading PC-based CAD system, AutoCAD that will enable the user to work with the new system effectively after a short time therefore, rising the productivity of the user (Section 1, paragraphs 3 and 4; section 3, paragraphs 1 and 2).

43. Claims 5, 6, 13, 14, 40, 41, 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Subrahmanyam et al and CAI as applied to claims 1, 12, 36, and 42 above, and further in view of Wang et al ("The Design and Fabrication of Welded Tubular Joints Using Solid Modelling Techniques", 2nd ACM Solid Modeling, 1993).

44. As to Claims 5, 6, 13, 14, 40, 41, 43 and 44 Subrahmanyam et al and CAI teach selecting within the computing environment, a generation technique based at least in part on the result of said examining and applying within the computing environment, the selected generation technique to generate a data representation of the solid model (sections 4.2, 4.3, 4.4, "Geometric Transformations", "Shape-Changing Operations", "Topology-Changing Operations"; Table 1 and description).

45. Subrahmanyam et al and CAI do not expressly teach the construction of a triangular or quadrilateral profile.

46. Wang et al teaches a unique interactive graphics software code which has been developed for the design and fabrication of tubular welded joints by a robotic welding system that is based upon planar boundary solid modeling techniques (page 430, Introduction, last paragraph). Wang et al further teaches the generation of a model of the two pieces to be welded together and of the weld itself, the model of the weld being of a triangular and quadrilateral profile (section 2.4 and Figure 8b).

47. Subrahmanyam et al and CAI and Wang et al are analogous art since they are both directed to solid modeling in mechanical design.

48. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the generation techniques as taught in Subrahmanyam et

al and CAI to include the construction of a triangular or quadrilateral profile as taught by Wang et al since Wang et al teaches a unique interactive graphics software code which has been developed for the design and fabrication of tubular welded joints by a robotic welding system that is based upon planar boundary solid modeling techniques (page 430, Introduction, last paragraph).

Response to Arguments

49. Applicant's arguments filed 11/20/06 have been fully considered but they are not persuasive.

50. Applicant argues: "...there is no teaching or suggestion that a data representation of a shape is generated by processing attributes. Subrahmanyam merely shows how the attributes of a shape may be effected by operations on the shape" (pages 25, 28).

As to this argument, the cited sections of Subrahmanyam (sections 4.2-4.4 and Table 1) are described as "general modeling operations" (section 4, first paragraph) and further show the operations that are performed in the generation of solid models that include the processing of attributes from an original geometry. Section 4.3, first paragraph, discusses the generation of a "new geometry" through shape changing operations, and section 4.4, first paragraph, and Figure 6 discusses the generation of a model shown in Figure 6b through performing topology-changing operations on an initial model shown in Figure 6a. Therefore, it is for these reasons that Subrahmanyam is shown to disclose the selecting a generation technique (the operations discussed in the

cited sections) and applying the selected generation technique to generate a data representation of the solid model.

51. Applicant argues, "There is no teaching or suggestion in the cited portion of Subrahmanyam of generating a tool based on a constructed profile" (pages 26, 28).

As to this argument, the cited sections of Subrahmanyam (page 117, column 2, paragraph 5 and Figure 4) shows a "Starting Block". This "Starting Block" contains attributes that are created as part of the "Design View", which is created from user defined attributes and system attributes, which would constitute a "constructed profile" as shown in Figure 3. Therefore, the starting block containing initial attributes is "generated" as part of the design view through a "constructed profile" of user defined attributes and system attributes as shown in Figure 3. Because the specification and drawings do not give a clear understanding of what a "tool" is, this "starting block" is considered to encompass the limitation of a "tool", further because it is "trimmed" through boolean operations with the slot feature attributes and hole feature attributes as shown in Figure 4.

52. Applicant argues, "the cited portions of Subrahmanyam make no mention of locating bodies referred to by said faces" (pages 26, 28).

As to this argument, the cited sections of Subrahmanyam (section 3.7, lines 1-6, lines 10-11; Figure 4, Design View) describe the relationships between attributes of pairs of faces. These relationships will "locate" bodies that are referred to by faces since the attributes will define relationships between a pair of faces wherein a face is a portion of a body, therefore "locating bodies" referred to by the faces.

53. Applicant argues, "...the cited portion of Subrahmanyam does not teach conditionally forming a wire body" (pages 27, 29).

As to this argument, the cited sections of Subrahmanyam (Figure 6(b); Section 4.4, lines 12-17) show a splitting operation wherein F and F' are formed when F is split by S2, wherein the figure shown in 6(b) is conditionally formed because the representation of S2 is replicated and therefore, removed through the split operation. Because the figure in 6(b) shows a model of a geometry formed by connected edges, and because of the lack of a clear definition of "wire body" in the specification, this figure was determined to encompass a "wire body".

54. Applicant argues, "...the cited portion of Subrahmanyam does not teach or suggest extending a face into a body" (pages 27, 29).

As to this argument, the cited sections of Subrahmanyam (section 4.4, lines 12-15; page 121, "Merging Operations", paragraphs 1-4) show operations such as splitting or merging that can be performed on the geometry. The examples of a merging operation show the "extending of a face into a body" as shown in Figures 7(a)-7(c) wherein one face is overlapped with another as shown in Figure 7(a) and as shown in Figure 7(c) wherein the faces of S1 are extended into the body of S2.

55. Applicant argues, "...the cited portions of Wang do not teach or suggest a triangular or quadrilateral profile" (pages 29 and 30).

As to this argument, the cited sections of Wang (section 2.4 and Figure 8b), show the limitation of a triangular and quadrilateral profile specifically in Figure 8(b) wherein a model of the weld metal is shown that was concluded to show the geometry

of a triangular and quadrilateral profile due to the angles that are shown that will connect the tubes together wherein the weld metal model is shown as having four sides in this figure. It was concluded that this figure encompasses both a triangular and a quadrilateral profile.

Conclusion

56. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

57. Subrahmanyam, Somashekar ("Fixturing Features Selection in Feature-Based System", Computers in Industry, Vol. 48, pages 99-108, 2002) teaches finding fixturing features from the design and machining features in a feature-based CAD system.

58. Subrahmanyam, Somashekar ("A Method for Generation of Machining and Fixturing Features from Design Features", Computers in Industry, Vol. 47, pages 269-287, 2002) teaches the use of attributes to generate design feature information and further using this information as the driving factor for the generation of machining and fixturing features.

59. Onodera et al (US Patent 7,110,922) teaches an analytic model preparing apparatus capable of efficiently preparing an analytic model of a profile model containing a joint portion.

60. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary C. Jacob whose telephone number is 571-272-6249. The examiner can normally be reached on M-F 7AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

***

Mary C. Jacob
Examiner
AU2123

MCJ
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